



7019

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—2023

DCE - FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Time : 3 Hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define unit cell. Write the coordination number of NaCl and CsCl unit cells.
2. Define the following :
 - (a) Solute
 - (b) Solvent
 - (c) Solution.
3. What is pH? Calculate the pH of 0.01 M HCl solution.
4. Define electrolyte and non-electrolyte. Give examples for each.
5. Write any three disadvantages of hard water in industries.
6. Write the preparation and uses of PVC.
7. Define the term fuel. Write the composition and uses of producer gas.
8. Write the health aspects of usage of soft drinks.
- * 9. Define primary pollutant and secondary pollutant. Give examples.

10. Define the following :

- (a) BOD
- (b) COD
- (c) Sink

PART—B

8×5=40

Instructions : (1) Answer **all** questions.
 (2) Each question carries **eight** marks.
 (3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Write the important postulates of Bohr's atomic theory and its limitations.

(OR)

(b) Define covalent bond and explain the formation of H_2 , O_2 and N_2 by Lewis dot method.

12. (a) Define molarity and normality. Find the molarity of 10.6 grams of Na_2CO_3 present in 100 ml of solution.

(OR)

(b) Explain Bronsted-Lowry theory of acids and bases and its limitations.

13. (a) Define the following :

- (i) Mineral
- (ii) Ore
- (iii) Gangue
- (iv) Flux
- (v) Slag
- (vi) Roasting
- (vii) Calcination
- (viii) Smelting

(OR)

(b) State and explain Faraday's laws of electrolysis.

14. (a) What is rust? Explain the mechanism of rusting of iron with chemical equations.

(OR)

- (b) Explain the softening of hard water by permutit process.

15. (a) Define thermoplastics and thermosetting plastics. Write any six differences between thermoplastics and thermosetting plastics.

(OR)

- (b) Define air pollution. Explain any three causes of air pollution.

PART—C

10×1=10

- Instructions :** (1) Answer the following question.
 (2) The question carries **ten** marks.
 (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. What is vulcanization? Explain vulcanization of rubber. Mention any four characteristics of vulcanized rubber.

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